

REMARKS

The Office Action notes that claims 1-3 are pending in the application. The Applicants have added new claims 15-20 by amendment. Support for the new claims can be found in paragraphs 45-47 of the published U.S. application. Therefore, no new matter has been added. Claims 1-3 and 15-20 are now pending.

In the Office Action, the Examiner first objects that the abstract includes improper language and does not have an acceptable format. The Applicant hereby provides, on a separate sheet, a substitute abstract that addresses this objection.

The Examiner next rejects claims 1-3 stand rejected under 35 U.S.C. §103(a) as being patentable over Gadgil et al., U.S. Patent No. 5,879,459 or Hyun et al., U.S. Patent No. 6,042,652.

The Applicants respectfully submits that the claims in their present form are allowable over both Gadgil and Hyun. In formulating the rejection, the Examiner failed to addresses one of the limitations set forth in claim 1. Specifically, claim 1 recites an atomic layer deposition method for a plurality of substrates “wherein a plurality of vapor injection pipes, each injecting one of the vapor substances periodically scans over each substrate to apply the various vapor substances alternately and repeatedly onto each substrate.” The Office Action simply does not address this limitation. Therefore, the rejection is improper formulated and the Applicants request withdrawal of the rejection on that basis.

Further, neither Gadgil nor Hyun teach or suggest this limitation. Gadgil discloses a reactor which includes either a single inlet (Fig. 2; Fig. 8; Column 8, lines 63-64) or multiple inlets (Column 6, lines 14-15). Gadgil does not disclose that these inlets are capable of “periodically scanning over each substrate to apply a vapor substance.” In fact, the drawings

indicate that the inlets are solitary and incapable of scanning. Therefore, the Applicant respectfully submits that independent claim 1 is allowable over the Gadgil because Gadgil does not teach or suggest all of the features recited therein. Further, the Office Action does not identify any secondary teaching in the art that discloses this limitation and does not provide any reason why one of skill in the art would modify Gadgil to include this limitation.

Turning to Hyun, the Applicants respectfully submits that the reference does not disclose a method in which a plurality of the injection pipes periodically scan over each substrate to apply vapor substances. Hyun discloses that gas is provided into the reaction chamber by gas supply portion 130. Gas supply portion 130 injects gas into the reaction chamber through utilization of gas supply lines 150 (column 5, lines 44-52). The gas supply lines do not scan over substrates. Rather, they remain in a solitary position. Therefore, the Applicants respectfully submit that Hyun does not disclose all of the features of claim 1. Further, the Office Action does not identify any secondary teaching that discloses this feature and does not provide any reason why one of the skill in the art would modify Gadgil to include this limitation.

It is further noted that in presenting the rejections, the Office Action admits that none of the prior art references “specifically teach reaction cells.” (page 4). The Office Action asserts, however, that it would be obvious for a person of ordinary skill in the art to utilize reaction cells in order to “produce a more efficient action.” The Applicants respectfully submit this motivation is based on hindsight. In paragraph 19 of the present application, the Applicants state that one of the objects of the invention is to provide an improved ALD method that addresses the problems of the prior art, one of which is lack of efficiency. (Paragraph 14-15). Thus, the motivation provided by the Office Action is impermissibly based on the Applicants’ own disclosure.

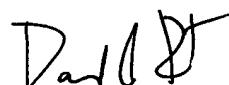
Furthermore, any modification of a reference can in some sense be based on efficiency.

The question is not whether or not it would be more efficient to utilize the teachings of the Applicants' disclosure, but rather why a person of ordinary skill in the art would be motivated to modify Gadgil and Hyun to include all the specific limitations of the Applicants' claims. The Applicant respectfully submits that the Office Action fails in this regard.

In view of the aforesaid the Applicant respectfully submits that application is in condition for allowance. Favorable reconsideration is requested.

Respectfully Submitted,

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